

## WHAT IS CLAIMED IS:

1. A method of repairing a crack in at least one side of a dovetail portion of a generator rotor coil slot wall, the dovetail portion having received at least two axially adjacent steel wedges and including at least a radial entry surface, an inwardly tapered surface and an intermediate radial surface, the method comprising:

a) machining a groove at least partly along said inwardly tapered surface to remove damaged material from said coil slot wall; and

b) replacing said at least two axially adjacent steel wedges.

2. The method of claim 1 wherein step a) includes extending said groove radially along said radial entry surface.

3. The method of claim 1 wherein step b) includes replacing the steel wedges with aluminum wedges.

4. The method of claim 1 wherein said groove is concave.

5. The method of claim 1 wherein said groove stops short of a radially inner edge of said inwardly tapered surface.

6. The method of claim 1 wherein said groove has a depth of about 0.06 inch.

7. The method of claim 1 wherein said groove is about 0.37 inch wide.

8. The method of claim 1 wherein said groove extends to a radially inner edge of said inwardly tapered surface, and wherein the method further comprises machining a second groove in said intermediate radial surface in an orientation transverse to said first groove.

9. The method of claim 8 wherein step a) includes extending said groove radially along said radial entry surface.

10. The method of claim 9 wherein said second groove extends about 0.25 inch on either side of said groove.

11. The method of claim 9 wherein said groove is about 0.37 inch wide.

12. The method of claim 11 wherein said groove has a depth of about 0.06 inch.

13. The method of claim 1 wherein edges of said groove are radiused.

14. The method of claim 8 wherein edges of said groove and said second groove are radiused.

15. The method of claim 1 wherein steps a) and b) are carried out on an opposite side of said coil slot wall as a preventative measure.

16. A method of repairing a crack in at least one side of a dovetail portion of a generator rotor coil slot wall, the dovetail portion adapted to receive at least two axially adjacent steel wedges and including at least a radial entry surface, an inwardly tapered surface and an intermediate radial surface, the method comprising:

a) machining a first concave groove in said radial entry surface and only partly along said inwardly tapered surface to remove damaged material from said coil slot wall; and

b) replacing said at least two axially adjacent steel wedges with aluminum wedges, such that said groove is centered on a butt joint between two axially adjacent replacement wedges.

17. The method of claim 16 wherein said groove has a depth of about 0.06 inch and a width of about 0.37 inch.

18. The method of claim 16 wherein edges of said first groove are radiused.

19. The method of claim 16 wherein steps a) and b) are carried out on an opposite side of said coil slot wall as a preventative measure.

20. A method of repairing a crack in at least one side of a dovetail portion of a generator rotor coil slot wall, the dovetail portion adapted to receive at least two axially adjacent steel wedges and including at least

a radial entry surface, an inwardly tapered surface and an intermediate radial surface, the method comprising:

a) machining a first groove in said radial entry surface and along said inwardly tapered surface;

b) machining a second groove in said intermediate radial surface in an orientation transverse to said first groove; and

c) replacing said two axially adjacent steel wedges with aluminum wedges, such that said groove is centered on a butt joint between two axially adjacent replacement wedges.

21. The method of claim 20 wherein said first and second grooves are concave in cross section.

22. The method of claim 20 wherein edges of said first and second grooves are radiused.

23. The method of claim 20 wherein said first groove has a depth of about 0.06 inch.

24. The method of claim 20 wherein said first groove is about 0.37 inch wide.

25. The method of claim 20 wherein said second groove extends about 0.25 inch on either side of said first groove.

26. The method of claim 20 wherein steps a) and b) are carried out on an opposite side of said coil slot wall as a preventative measure.

27. A generator rotor repaired according to the method of claim 1.

28. A generator rotor repaired according to the method of claim 16.

29. A generator rotor repaired according to the method of claim 20.